Investigaciones Regionales

Wage flexibility and local labour markets: a test on the homogeneity of the wage curve in Spain *

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ABSTRACT: In this paper we analyse wage flexibility in Spain and its regional differences, departing from the estimation of wage curves. Using data from the Structure of Earnings Survey for 1995, 2002 and 2006, we estimate regional wage equations, relating the observed wage received by workers to a group of personal and job characteristics, as well as to the regional unemployment rate. This analysis allows us to test for the existence of regional differences in the degree of wage flexibility, which may have an important influence on the evolution of regional unemployment, given its impact on the ability of the local labour market to absorb negative shocks. Estimated results indicate that regions suffering from higher unemployment rates exhibit lower wage flexibility. Collective bargaining reforms should pursue greater wage flexibility, especially in regions with high rates of joblessness.

JEL Classification: J31, J64, R15, R23.

Keywords: Wage flexibility, wage curve, Structure of Earnings Survey, regional unemployment.

Flexibilidad salarial y mercados de trabajo locales: un contraste sobre la homogeneidad de la curva de salarios en España

RESUMEN: En este trabajo analizamos la flexibilidad salarial en España y sus diferencias regionales a partir de la estimación de curvas de salarios. Empleando datos procedentes de la Encuesta de Estructura Salarial para los años 1995, 2002 y 2006 procedemos a estimar curvas de salarios por grupos de regiones, vinculando

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el salario percibido por los trabajadores a un grupo de variables que miden las características personales y del puesto de trabajo, así como a la tasa de paro regional. Nuestro análisis nos permite contrastar la existencia de diferencias regionales en el grado de flexibilidad salarial, que pueden haber ejercido una importante influencia en la evolución del desempleo, dado su impacto sobre la capacidad de absorción de perturbaciones por los mercados de trabajo locales. Los resultados de las estimaciones indican que las regiones que muestran mayores tasas de desempleo también presentan un menor grado de flexibilidad salarial. Las potenciales reformas del sistema de negociación colectiva deberían perseguir una mayor flexibilidad salarial, especialmente en aquellas regiones con mayores tasas de paro.

Clasificación JEL: J31, J64, R15, R23.

Palabras clave: Flexibilidad salarial, curva de salarios, Encuesta de Estructura Salarial, desempleo regional.

1. Introduction

Three major features have characterised the Spanish labour market during recent decades. First, and most evident, the unemployment rate in Spain is considerably higher than in other EU countries. Between 1980 and 2000, and again since 2008, the unemployment rate in Spain has been the highest among EU and OECD countries. There is a consensus in the literature (see the review by Blanchard, 2006) that differences in current unemployment rates in Europe can be explained by the different responses in each country to external shocks and the reactions to those shocks by individual national labour market institutions. In this context, Spain is a good candidate for analysis (Bentolila and Jimeno, 2006).

A second feature is the very high volatility of employment. Data from the Spanish Labour Force Survey shows that, between 1994 and 2007, more than 7 million jobs were created in Spain (more than half of the growth in employment in the EU) whereas, since the onset of the Great Recession at the end of 2007, the number of unemployed has surged from 1.7 million to 5.6 million, much more than any other country in the Euro zone [1]. During the last two decades, employment in Spain has been highly procyclical with respect to its neighbours: during upturns, more jobs have been created than in the rest of the EU, but during recessions, more jobs have been lost. Again, labour market institutions are shown to play an important role (Bentolila and Jimeno, 2006). In particular, the (external) flexibility at the margin introduced by the extension of temporary contracts (the temporary employment rate has stood at well above 30% since the mid-1980s) has been regarded as key to this severe volatility in employment growth and decline (Dolado *et al.,* 2008, Sala and Silva, 2009). In this

[1] In fact, during this period, more than 50% of the newly unemployed in the Euro area are native Spanish. This sharp decrease in employment reflects the fact that in Spain the labor market has mainly adjusted to the decline in output via a reduction of employment, rather than via a combination of wage and hours reductions.

respect, the labour institutional structure in Spain has left little room for internal and wage flexibility, whereas inter-regional migration is still scarce, so that the use (and abuse) of temporary contracts has been the main way to provide flexibility in labour relationships [2]. Moreover, the integration of almost 500,000 immigrants per year during the period 2000-2006 has encouraged this external flexibility, since most of these workers have been given temporary employment, and were willing to accept lower wages (Bentolila *et al.*, 2008) [3].

The third major feature of the Spanish labour market is the existence of large and persistent regional disparities in the unemployment rate. Employment growth has not been homogeneously distributed across the Spanish regions, basically due to the existence of important regional differences in wage setting, as a consequence of significant imitation effects in wage bargaining (Bande *et al.,* 2007, 2008) [4]. These authors show that, in general, the less productive sectors in the less productive regions link their wage growth to the conditions prevailing in the most productive sectors of the most productive regions. This process increases unit labour costs, especially in less productive regions, and thus limits their ability to create employment, even during economic upturns. As a consequence, regional unemployment disparities expressed in relative terms exhibit a marked countercyclical behaviour.

This paper aims to analyse jointly the two latter features: increased flexibility and persistent regional disparities. High rates of temporary employment, and a large immigrant influx, may have endowed the Spanish labour market with a way to increase flexibility, which has had some impact on wages. We add new empirical evidence to the existing literature by identifying the degree of pay flexibility in the Spanish labour market during the last two decades, estimating regional wage curves. The contribution of our work is twofold. First, we provide measures of wage flexibility at the regional level, within a country in which regional differences are marked and persistent. Second, we use the most extensive data set, providing information at the individual level for workers and firms, the Structure of Earnings Survey (SES), covering a period of several years.

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[2] Internal flexibility refers to mechanisms within the firm to adjust the employment level (adjustment in hours worked, temporary reduction in wages, occupation mobility within the firm, etc.). External flexibility refers to mechanisms for adjusting the number of workers, such as, for example, the procedures for hiring and firing (for more on this, see Eichhorst *et al.,* 2008). The generalization of fixed-term contracts has facilitated changes in the number of workers, since firing costs are substantially lower for temporary workers, at most 8 days per year worked, as against 33 or 45 days per year worked, typical in the case of permanent contracts.

[3] During the downturn, workers holding temporary contracts have borne the brunt of job losses, as firms have adjusted to the sudden decline in demand by simply not renewing these contracts. Between the last quarter of 2007 and the first quarter of 2012, almost 2 million temporary jobs have been lost in the Spanish economy.

[4] This is a well-known problem in Spain. The International Monetary Fund and the Bank of Spain have both commented that the collective bargaining system, dominated by industry-wide agreements that cannot be modified, is too rigid. In fact, the reforms of collective bargaining undertaken between 2010 and 2012 have pursued giving more prevalence to firm agreements and making it easier for companies to opt out of collective bargaining agreements in order to enhance both internal and wage flexibility. See Simón (2010) for a discussion.

The paper is organised as follows. Section 2 summarises our theoretical framework for the existence of regional unemployment disparities, and describes the most recent evolution of employment and unemployment in the Spanish labour market. Section 3 summarises the existing estimates of wage flexibility in Spain and Europe, in the context of our framework. Section 4 presents evidence of differences in regional labour market flexibility, using data from the SES. Our conclusions are presented in Section 5.

2. Wage flexibility in Spain and Europe: review of the empirical evidence

2.1. Theoretical underpinnings

Labour market flexibility is a key assumption under the standard neoclassical models, and refers to a situation where wages are flexible and the labour force is geographically and occupationally mobile. This implies that, under the standard assumptions made in this type of model, if we add perfect competition in the product market, full employment is guaranteed.

However, at least in European countries, full employment has been the exception rather than the norm since the early 1980s. The high and persistent unemployment rates registered in the European economies during the 1980s and 1990s generated a significant body of literature that, fundamentally, concluded that the phenomenon can be better explained by interactions between labour market institutions and responses to external shocks (Blanchard and Wolfers, 2000; Bertola *et al.,* 2001; Blanchard, 2006), shaping the configuration of unemployment rates. Rigidity imposed by labour market institutions prevents labour markets from rapidly responding to external shocks, avoiding functional adjustment processes, with important differences across countries. Consequently, the economic policy recommendation was clear: the labour market should be more flexible to absorb possibly asymmetric adverse shocks. In empirical work, labour market flexibility is usually proxied by pay or wage flexibility [5]; that is, the response of wages to the general conditions of the labour market, which are often measured by the unemployment rate.

Marston (1985) shows that regional differences in unemployment may reflect either equilibrium or disequilibrium. If regions differ in amenities, each would tend towards its own natural rate. Given that amenities change slowly over time, the existence of disparities in unemployment becomes an equilibrium result. In a disequilibrium framework, NAIRUs can be similar across regions, but adjustment processes may evolve differently because of different degrees of flexibility [6].

While differences across regions in demand-side, supply-side and institutional factors have been extensively considered in the empirical literature (see Elhorst,

[5] See Monastiriotis (2006) for an in-depth discussion of the issue of labour market flexibility.

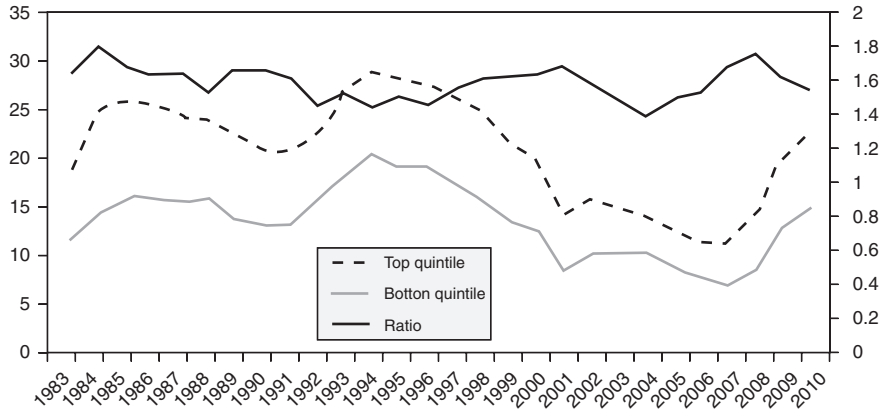
[6] For a critique of this view, see Bande and Karanassou (2011).

2003), in recent years, the institutional settings focused on wage schemes have been increasingly considered in studies on regional unemployment disparities (see Brunello *et al*., 2001; Bande *et al.,* 2008; Basile and De Benedictis, 2008). Since most of the institutions are common between regions, the focus has been on the wage-setting mechanism, specifically on how wages respond to regional factors such as labour productivity and unemployment (Jimeno and Bentolila, 1998). This will be analysed in Section 3. Before that, we present evidence on the evolution of regional differences in unemployment rates for the Spanish economy.

2.2. Regional unemployment rate differences in Spain

In Spain, a cursory glance at unemployment rates allows us to appreciate large differences between regions [7]. Figure 1 reveals the wide differences in unemployment rates across Spanish regions, showing the average unemployment rate in the three high-unemployment regions (top quintile of the distribution), in the three low-unemployment regions (bottom quintile) and the ratio between the rates in the high-unemployment and the low-unemployment regions over time. This figure follows closely the evolution of the national unemployment rate throughout the business cycle: an increase until the mid-1980s; a marked decrease during the expansionary phase between 1986 and 1991; a sharp rise until 1994 (when the national unemployment rate attained a peak of 24.1%); a steady reduction between 1994 and 2007, and then an abrupt surge back to 1994 levels.

Figure 1. Averaged top and bottom quintiles of unemployment rates distribution and their ratio



[7] All the information used here comes from the Eurostat Region dataset and from the Spanish Labour Force Survey, elaborated by the Spanish National Statistics Institute (*INE* in Spanish), according to the European standard issued by Eurostat. The thorough reform of the survey undertaken in 2002, consisting of the change of the elevation factors and of the adaptation of the definition of unemployed to that proposed by Eurostat, implied a clear break in the sample that must be borne in mind.

The average difference between the top and the bottom quintiles has been about 7.5 percentage points, with the recession periods showing higher values (almost 10) and the expansionary phases showing lower (the minimum was less than 4, in 2004). This is preliminary evidence that absolute differences, computed as the difference between the regional and the national unemployment rates, are marked and procyclical [8]. However, when differences are computed in relative terms, as the ratio between the regional and the national unemployment rates, a countercyclical behaviour is observed, increasing during expansionary phases and declining in periods of recession [9].

In the series included in table 1, we show regional unemployment rates at different moments in time from 1983 to 2010, as well as some illustrative indicators. It can be observed that regional differences in the unemployment rate are persistent across Spain. During the last 30 years, Andalusia, the Canary Islands and Extremadura have been at the bottom of the regional rankings, with unemployment rates much higher than the average. At the other extreme, the Balearic Islands, La Rioja, Aragon and Navarre have always been in the group of regions with the lowest unemployment rates. This indicates that regional differences in Spanish unemployment rates exist and persist, similar to other EU countries (European Commission, 2000, Baddeley *et al.,* 1998).

Table 1 also suggests that, during the most recent decades, Spanish regions have formed groups as regards their unemployment rates. Prior evidence (López-Bazo *et al.,* 2002) has shown that a polarization process was under way at the provincial level during the 1980s and early 1990s. However, Bande *et al.* (2009), for the period between 1980 and 2001, found a weak convergence process in the regional unemployment rates, along with a stronger polarization effect, that did not affect the whole set of Spanish regions. On the one hand, two clusters of regions were identified by these authors, with opposite unemployment behaviors: those regions in the Ebro axis and Balearic Islands showed unemployment rates below the national average, while the other cluster (Andalusia, Extremadura and the Canary Islands) showed values 1.5 times greater than the average [10]. On the other hand, a large third group formed by the rest of the regions was converging towards the national average. Bande *et al.* (2010) confirm that this pattern continued in the second half of the first decade of the 21st century, and that the Great Recession was inverting the process, with an ongoing process of overall relative unemployment convergence. Figure 2 clarifies this issue, presenting the estimated kernel density functions for the relative unemployment rates at selected moments of time [11].

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[8] Both the difference between the maximum value and the minimum value (figure A1 in the Appendix) and the absolute dispersion (figure A2 in the Appendix) move parallel to the evolution of the national unemployment rate.

[9] See also the ratio between the maximum and the minimum value in figure A1 and the relative dispersion in figure A2, both in the Appendix.

[10] For a similar result, see López-Bazo and Motellón (2011).

[11] We use the expression «relative unemployment rates» to refer to the regional differences in unemployment rates expressed in relative terms.

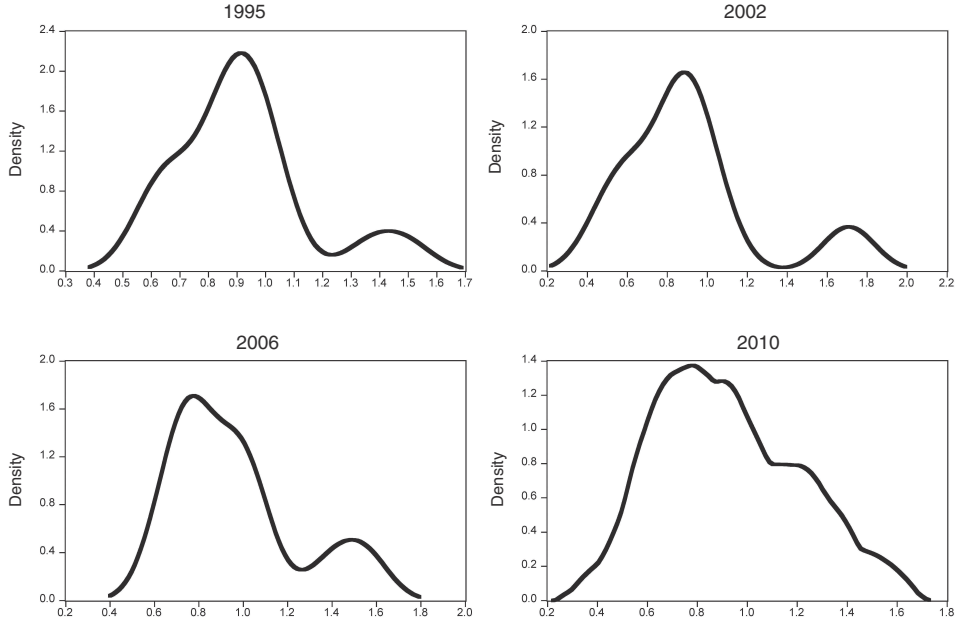
Table 1. Relative regional unemployment rates

	1983	*1986*	*1988*	*1990*	*1992*	*1994*	*1996*	*1998*	*2000*	*2002*	*2004*	*2007*	*2008*	*2009*	*2010*
Andalusia (AND)	22.41	30.09	28.68	25.53	28.18	34.59	32.35	29.13	24.13	19.68	17.07	12.76	17.83	25.35	27.97
Aragón (ARA)	13.68	16.00	13.94	9.54	12.31	18.30	15.28	11.37	7.20	5.80	5.62	5.24	7.15	12.82	14.77
Asturias (AST)	13.90	18.58	19.45	17.49	16.82	21.95	20.93	18.84	16.98	9.73	10.36	8.48	8.45	13.42	15.97
Balearic Isl (BAL)	13.93	14.19	10.92	10.54	11.55	17.80	13.41	11.29	6.53	7.61	9.16	6.98	10.18	18.02	20.37
Canary Isl. (CAN)	19.11	25.72	22.01	22.98	24.82	26.47	21.94	18.47	13.42	11.13	11.96	10.44	17.36	26.19	28.70
Cantabria (CANT)	12.61	17.71	20.64	16.77	16.65	23.36	23.87	17.79	13.36	10.05	10.54	5.90	7.17	11.99	13.87
Castilla-León (C-L)	13.56	18.04	17.36	15.39	17.70	21.43	19.90	18.00	13.75	10.48	10.69	7.18	9.51	13.78	15.78
Castilla-Mancha (C-M)	14.08	15.17	15.11	13.09	15.66	19.70	19.43	16.79	12.50	9.52	9.52	7.61	11.59	18.81	20.99
Catalonia (CAT)	21.08	21.16	18.55	12.54	13.54	21.17	18.83	14.42	8.88	10.11	9.70	6.55	9.00	16.25	17.75
Com Valencia (VAL)	17.27	19.54	17.14	14.26	19.10	24.59	21.62	16.47	11.60	10.77	10.40	8.76	12.13	21.24	23.30
Extremadura (EXT)	16.35	27.42	26.22	24.84	25.89	31.64	30.21	28.90	23.63	19.22	17.20	13.06	15.20	20.55	23.04
Galicia (GAL)	9.89	13.46	12.43	12.29	16.24	19.93	18.65	17.35	14.88	12.17	13.61	7.64	8.73	12.59	15.40
Madrid (MAD)	16.70	19.35	16.14	12.23	12.96	20.57	20.18	16.79	11.56	7.27	6.71	6.30	8.69	14.03	16.08
Murcia (MUR)	16.62	19.64	17.49	15.95	20.97	25.52	23.56	17.28	12.73	11.38	10.67	7.56	12.63	20.73	23.35
Navarre (NAV)	15.52	18.10	14.41	11.66	11.47	14.62	11.70	10.09	5.65	5.71	5.54	4.76	6.72	10.89	11.85
Basque Country (PV)	19.62	23.18	21.22	18.64	19.56	24.39	20.62	16.91	12.08	9.59	9.71	6.12	6.45	11.04	10.55
La Rioja (RIO)	11.26	15.94	13.37	8.33	13.53	16.97	14.10	11.25	8.03	7.02	5.58	5.66	7.79	12.75	14.27
National (SPA)	17.33	20.98	19.24	16.24	18.35	24.12	22.08	18.61	13.87	11.48	10.97	8.26	11.34	18.01	20.06
Max-min	12.52	16.63	17.76	17.20	16.71	19.97	20.65	19.05	18.48	13.97	11.66	8.30	11.38	15.30	18.15
Max/min	2.27	2.24	2.63	3.06	2.46	2.37	2.76	2.89	4.27	3.44	3.10	2.74	2.76	2.40	2.72
Dispersion	3.41	4.65	4.76	5.14	5.09	5.11	5.38	5.29	5.20	3.90	3.44	2.40	3.58	4.90	5.37
Relative dispersion	0.20	0.22	0.25	0.32	0.28	0.21	0.24	0.28	0.37	0.34	0.31	0.29	0.32	0.27	0.27
Q4	18.49	25.62	23.68	20.87	22.34	28.93	27.58	24.94	19.77	15.39	13.66	10.71	13.91	19.98	22.36
Q1	11.25	15.70	15.48	12.46	15.47	20.09	18.87	15.46	12.09	9.74	9.91	6.40	7.90	12.44	14.51
Q4/Q1	1.64	1.63	1.53	1.67	1.44	1.44	1.46	1.61	1.64	1.58	1.38	1.67	1.76	1.61	1.54

Notes: Q4/Q1 stands for the ratio of the average regional unemployment rate in the top quartile over that in the bottom quartile.
Source: Own elaboration from the Labour Force Survey.

These snapshots confirm prior results. During the economic boom that began in the second half of the 1990s, until the upheaval of the Great Recession, relative regional unemployment disparities were exacerbated, since the two-mode distribution in 1995 was progressively sharpened, with a low unemployment mode around 0.9 in 2002 and 0.8 in 2006. The high unemployment mode, on the contrary, moved from 1.4 in 1995 to 1.7 in 2002 and back to 1.5 in 2006. However, within the low unemployment group of regions, a different behaviour can be found, and an additional mode could be identified at 0.6 in 2002 and 1.0 in 2006 (see Bande *et al.*, 2010 for a detailed account of changes in the distribution of regional unemployment rates throughout the first decade of the century). If the hypothesis of an imitation effect on wage bargains during expansions were true, we should observe a reversal of the described pattern through the Great Recession, and this is precisely what seems to be happening in Spain. The last panel of figure 2 shows the kernel density function for the distribution of relative unemployment rates in 2010, pointing to an ongoing process of convergence towards the national average. This result provides support for the hypothesis that the process of wage formation is a fundamental element in the explanation of unemployment disparities in the Spanish economy.

Figure 2. Estimated kernel density functions for the relative regional unemployment rates



Notes: a Gaussian kernel function is used to estimate the kernel density, while the bandwidth has been selected using the Silverman option. The relative unemployment rate is defined as the regional unemployment rate over the national unemployment rate.

We explore this in the empirical section, where wage flexibility is measured for the three different groups of regions identified: those with high relative unemployment rates, those with low relative unemployment rates, and those with relative unemployment rates close to 1. To carry out this task, we make use of the wage curve as an appropriate measure of wage flexibility.

3. Wage curves in Spain: regional differences

The wage curve is the term used to describe the negative relationship between the levels of unemployment and wages that arises when these variables are expressed in local terms, reflecting that, for two identical individuals, one working in an area of high unemployment and the other working in a region with low joblessness, the former has lower earnings. Since the initial work by Blanchflower and Oswald (1994), many studies have found that this relationship is quite similar across countries, and it can be represented by [12]:

$$w_{ir} = -0.1\ u_r + other\ terms \tag{1}$$

where w_{ir} is the log of the wage of an individual living in region r; u_r is the log of the regional unemployment rate, and the *other terms* are control variables for worker and job characteristics. Here, the coefficient –0.1 is the elasticity of wages with respect to unemployment, indicating that, for a given region and a given point in time, doubling the unemployment rate implies a decrease of one tenth in wages, *ceteris paribus*.

Empirically, the wage curve can be estimated by adding the regional unemployment rate to the typical wage equation

$$w_{irt} = a + f_r + d_t + b\ \boldsymbol{X}_{irt} + \beta\ u_{rt} + \varepsilon_{irt} \tag{2}$$

where the subindex i denotes the individual, r the region and t the year. $\boldsymbol{X}_{irt}$ is a vector of workers' personal aspects including, among others, race, marital status, gender, level of education, and other variables related to the specific workplace, such as experience, type of contract, occupation, activity, etc. Thus, w_{irt} and u_{rt} stand, respectively, for the hourly earnings and the regional unemployment rate (both in logs). Finally, f_r and d_t are, respectively, the fixed regional and time effects. Fixed time effects in (2) take into account the influence of variables that are supposed to be time-variant but constant across states. Fixed regional effects are included to capture each region's structural features, such as local amenities. These fixed regional effects constitute the key element of the wage curve, since they capture the permanent features of the environment, so that the unemployment rate is basically affected by the transitory aspects of the relationship between wages and unemployment. When regional fixed effects are not included, the unemployment elasticity captures both

[12] See Nijkamp and Poot (2005), Montuenga and Ramos (2005) and Blanchflower and Oswald (2005) for lists of countries in which wage curves have been found.

the permanent and transitory components of the relationship between wages and unemployment rates, allowing for a positive long-term relationship, as forecast by the theory of compensating differentials**.**

Our focus is on the coefficient β. A wage curve exists when the estimate of β is negative and statistically significant. The log specification of the unemployment rate is common in the literature. The value of the coefficient β is then interpreted as a measure of the degree of wage flexibility. The greater the value of β, the greater the response of wages to unemployment rate fluctuations, and hence, a higher wage flexibility (or lower wage rigidity). Attaching regional unemployment rates to each individual makes it possible to associate each worker with the relevant local labour market.

Most of the literature has found an estimate of the unemployment elasticity for Spain close to the «empirical law of economics» of –0.1. The papers surveyed below have faced different problems, depending on the data base employed. Canziani (1997) used the *Encuesta de Estructura, Conciencia y Biografía de Clase* of 1991, where the unemployment rate was not disaggregated at the territorial level. Unemployment rates were computed by sector and by gender, obtaining a wage-elasticity to unemployment of –0.13, when gender and age dummies are not included in the estimation. García and Montuenga (2003) and Montuenga *et al*. (2003) used the European Community Household Panel (ECHP) to estimate a wage curve for Spain, which provided individual information on workers and firms in panel data form, but the limited territorial detail of the data (seven NUTS I regions) forced them to use unemployment data disaggregated by region, by age, and by gender. Using a random effect specification, these authors obtain a value for the unemployment rate of about –0.13. Sanroma and Ramos (2005) employed individual data from the Spanish Family Budget Survey (*Encuesta de Presupuestos Familiares* EPF) for 1990/91, which includes information at the provincial level (50 local labour markets, NUTS III level) only for workers. Their results also show a wage curve for all employees with an elasticity of –0.13.

In this paper, we use the Structure of Earnings Survey (SES), *Encuesta de Estructura Salarial*, which has the great advantage of providing detailed information at the individual level about wage-earners, and about the establishments where they work, i.e. each observation is a matched employer-employee, for a great number of employees. Since this information is offered for three different years, we can pool the information to construct a pseudo-panel. Despite that the regional dimension of the survey is at the NUTS II level, unemployment rates are disaggregated by categories in order to gain variability and robustness in the estimation. Extending this previous work, we are not interested in estimating the Spanish wage curve, but in studying its performance across the Spanish regions. In this sense, our approach is closer to that of Ammermuller *et al.* (2010), Livanos (2010) and Deller (2011).

In estimating specification (2)**,** some econometric issues should be considered. First, as regards the plausible endogeneity of unemployment, prior research (García and Montuenga, 2003) has shown that this is not the case in Spain, since unemployment rates are shown to be predetermined. Second, since wages may respond to un-

employment through: i) changes in standard rates; ii) overtime rates, and iii) the proportion of overtime to total hours, and given that overtime is typically remunerated at a premium rate, the marginal cost of labour that is independent of hours worked is the standard hourly wage paid for the working period (see Hart, 2003). Third, regional prices must be used to compute real wages in order to control for differences in regional life costs. Fourth, whereas the dependent variable is expressed in individual terms, unemployment rates are expressed in aggregate terms, leading to a bias known as the «common group effect», which must be controlled for (Moulton, 1986). Finally, and related to the previous issue, given that the unemployment rate does not change across individuals, the true number of degrees of freedom of the estimation is not the number of individual observations, but rather the product of the number of regional markets times the number of time periods. Since this dimension may be small in datasets (as it is in our own case), measures of the unemployment rates disaggregated by the characteristics of the workers (gender, age, education level) should be used (see also Kennedy and Borland, 2000, and Montuenga *et al.*, 2003).

4. Empirical results

In this section, we present our empirical approach and the main econometric results of the estimation of a wage curve at the regional level for Spain. We begin by describing our dataset. Obviously, in order to estimate wage equations, we need individual data on wages and on personal and job characteristics. At the same time, the regional dimension of our approach requires a sufficient number of observations in order to achieve robust econometric results, as many of the properties of the estimators hold only under the assumption of large samples. Our main database is the SES, conducted by the Spanish Statistics Institute (*INE* in Spanish) in 1995, 2002 and 2006, comprising a large number of observations, with regional disaggregation at the NUTS II level. It does not represent the whole set of employed workers, since only wage earners are included in the sample.

The reference population in the survey was originally formed by employees working in establishments with at least 10 workers, involved in any activity except agriculture, farming, fisheries, public administration, defence, social security, private households, and extra-territorial organisations and bodies. This initial design has been modified in the subsequent waves. For instance, the 2002 survey included additional economic activities, as education, health and social work or other community, and social and personal service activities. In the 2006 survey, firms of between 1 and 9 workers were also included. The main advantage of this statistical source is its large size, providing detailed information about wage-earners and about the establishments where they work. Each observation is a matched employer-employee data, providing a set of information related to the characteristics of the individual as well as job and workplace information.

The estimation of the wage curve (2) involves relating the individual wage to the closest available unemployment rate, controlling for as many personal and job

characteristics as possible. In principle, the more precisely the unemployment rate is defined, the more robust will be the computation of the wage elasticity to local unemployment. Ideally, an individual unemployment rate would proxy the risk of joblessness for a particular worker. In practice, there are many difficulties in achieving highly disaggregated unemployment rates. In our case**,** the most reliable statistical source for the unemployment rate, i.e., the Spanish Labour Force Survey, has the disadvantage of providing non-significant figures of active and unemployed population when the level of disaggregation is high. Thus, initially, we attempted to calculate unemployment rates at the regional level by gender, age (4 groups) and education (4 levels) but found ourselves with many empty or unreliable figures. Consequently, we reduced the level of disaggregation, and computed unemployment rates at the regional level by gender and educational groups alone. However, as indicated above, this introduced another problem, since the estimation of an equation such as (2) involves variables with different levels of aggregation, which may lead to biased estimates if all of the workers in a group share the same unemployment rate. More precisely, estimates of the more aggregated variable (the unemployment rate) tend to exhibit lower standard errors. We also explored the possibility of estimating the wage curve for each year and region, and compared the slope coefficients for the unemployment rate, but found non-significant coefficients, with incorrect signs in many cases.

We then adopted a different approach, pooling the information gathered in the three waves of the survey into a unique dataset [13]. This necessitated homogenising the variables, in order to make them comparable. Specifically, we restricted our analysis to those sectors reported in the 1995 survey, and dropped from the sample variables with different levels of information that were not reconcilable (for instance, type of property, or type of market towards which production is directed). Moreover, we dropped from the 2006 survey those observations corresponding to firms of between 1 and 9 workers, in order to have homogenous individuals across samples. Thus, we ended with a sample of 777,789 observations. Unemployment rates are disaggregated by region NUTS II level, gender, and education (four levels). Additionally, in order to make the computed wages comparable, we deflated them with the regional consumer price index provided by the INE [14]. Finally, the hourly wage was computed without taking into account extraordinary payments (as discussed in the previous section). The Appendix (table A1) provides the definitions of the variables included in the estimated wage equation.

Given the results presented in Section 2, we concluded that Spanish regions form groups (or clusters) as regards the behaviour of their unemployment rates, and we hypothesised that this different behaviour could be explained by different degrees of sensitivity of wages to the unemployment rate, *i. e.,* different levels of wage flexibility.

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[13] Note that, despite the fact that the SES provides data for three waves, it is not a panel, since the surveyed firms are not necessarily the same, neither are the workers included in the sample.

[14] Given the change in the base year of the CPI in 2002, we used the regional CPI increase since 1995 provided by the INE. Therefore, the 1995 deflator takes value 1, and the values for 2002 and 2006 are calculated accordingly, and thus nominal wages are deflated. The implied assumption is that the price level is the same across regions at the base year; but this a problem common with any regional price deflator.

Since the estimation of the wage curve allows for the identification of such elasticity, we explore this line next, by considering different sets of regions. This approach follows Livanos (2010), who estimates a wage curve for the set of Greek regions with unemployment rates above the national average, and another wage curve for the set of regions with unemployment rates below that average. Similarly, Ammermüller et al (2010) compute wage curves for West Germany against East Germany, as well as for the North of Italy against the South [15].

In our case, and according to results in Section 2, we split our sample into three groups of NUTS II regions, as indicated above. First, those with high unemployment rates (Group H), formed by Andalusia, Extremadura and the Canary Islands; second, a group formed by Aragon, the Balearic Islands, Navarre, the Basque Country and La Rioja, which exhibit low unemployment rates (Group L) [16]. The remaining 9 Spanish regions are regarded as regions with medium unemployment rates (Group M).

Equation (2) was therefore estimated by OLS for the whole sample and for each group, including regional and time fixed effects, as well as all of the variables described in the Appendix, which account for the main personal and job characteristics. For brevity, we only report the results obtained for the unemployment rate coefficient. Table 2 summarises the main results [17].

Table 2. OLS estimation of the wage equation

	All Regions	*Group H*	*Group M*	*Group L*
β	–0.082*	–0.0602*	–0.0992*	–0.1134*
t-statistic	–5.42	–2.56	–4.81	–3.29
Nº of observations	777,789	126,729	486,851	164,209
Nº of clusters	408	72	216	120

Notes: t-statistic based on robust standard errors. Nº of clusters refers to the number of different unemployment rates within each group. See text for definition of Groups, and Appendix for other variables included in the estimated model. * indicates 95% significance.

From table 2, it can be seen that wage elasticity to unemployment at the aggregate level is –0.08, not statistically different from either the standard value of -0.1 found in the literature (Blanchflower and Oswald, 1994, 2005) or the «modal» value of -0.07 reported by Nijkamp and Poot (2005) in their meta-analytic study. When

[15] A somewhat different approach is applied by Deller (2011), who computes wage curves for the US at the county level, using techniques that are specific for spatial analysis.

[16] We also attempted to perform individual wage curve estimations for each region, once the three waves of the SES were pooled. However, even though correctly signed, the unemployment elasticity of wages was never significant for each region, due to the insufficient level of disaggregation of the unemployment rate. Results are available upon request.

[17] Table A2 in the appendix provides the whole set of estimates. In general, the estimated coefficients are in line with theoretical predictions and previous findings in the literature as regards the determinants of the individual wage.

disaggregating into the three sets of regions, to take into account that unemployment rates are quite different across those regions, we obtain very interesting results, summarised in the last three columns of table 2. Differences in the estimated coefficients are not very large, but statistically significant between the three groups [18]. Specifically, in regions with unemployment rates close to the national average (Group M), the unemployment elasticity is almost the «typical» –0.10 (estimated coefficient of –0.0992, not statistically different from –0.1). However the estimates for the other two groups are dramatically different. The group of high unemployment (Group H) exhibits a much lower degree of wage elasticity (–0.0602) while the group of low unemployment (Group L) almost doubles this figure, with an estimated elasticity of –0.1134. These results indicate that high unemployment is related to low wage elasticity, while low unemployment is related to higher sensitivity of wages to local labour market conditions. Consequently, if wage flexibility is a mechanism that allows for absorbing external shocks without largely affecting employment, our results seem to indicate that regions that suffer from higher unemployment rates exhibit lower wage flexibility [19].

5. Conclusions

Most of the theoretical and empirical economic literature agrees that labour market rigidity should be addressed in order to better adjust against negative shocks impacting an economy. At the regional level, and given that institutions are usually common within a country, one possible way of providing flexibility to a regional labour market is through wage flexibility, so that wages may respond to external shocks by adapting to new circumstances as, for example, an increase in unemployment rates. Wage flexibility can be measured through the wage curve, which (inversely) relates the local unemployment rate to individual wages.

We have focused on the Spanish case, a country characterised by large and persistent regional differences in the unemployment rate. We explore whether such differences may be related (or not) with different behaviour across regions in wage flexibility. Specifically, we have proceeded to estimate a national wage curve, along with regional wage curves, to assess whether wage flexibility differs across regions or sets of regions. Using data for three moments in time, 1995, 2002 and 2006, to make use of the most extensive data base for wages and individual and job characteristics, the Structure of Earnings Survey, we have estimated wage curves considering three sets of regions: those with persistently higher unemployment rates than the national average; those with persistently lower rates, and those with figures close to the national rate.

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[18] Standard Wald tests strongly reject the null that the slope coefficient for the unemployment rate is similar across the three models at the 1% confidence level. The F(2, 777719) statistic is 1127,72, with a *p*-value of 0.000. We therefore conclude that the estimated slope coefficients for the three models are statistically different.

[19] We also attempted alternative specifications of the wage curve, adding the squared unemployment rate or the log unemployment to the third power. The general results are not changed, we do not report these estimates to preserve space, but they are available from the authors upon request.

Our hypothesis was very simple: if wage flexibility is a mechanism to absorb external shocks in order to accommodate employment variations, those regions with low wage flexibility should exhibit, *ceteris paribus*, higher unemployment rates. The estimated results appear to confirm this hypothesis. In this context, spurring flexibility in regional labour markets, especially those with severe rigidities, would be crucial and unavoidable for absorbing negative supply shocks. The availability of longer and more comprehensive data sets will, this hypothesis to be more robustly tested.

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Appendix

Figure A1. National unemployment rate and regional differences in unemployment rates

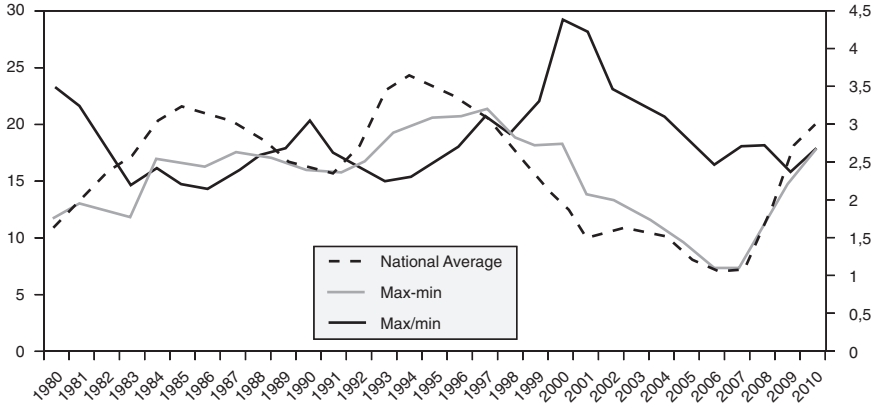

Figure A2. National unemployment rate and absolute and relative regional disparities in unemployment

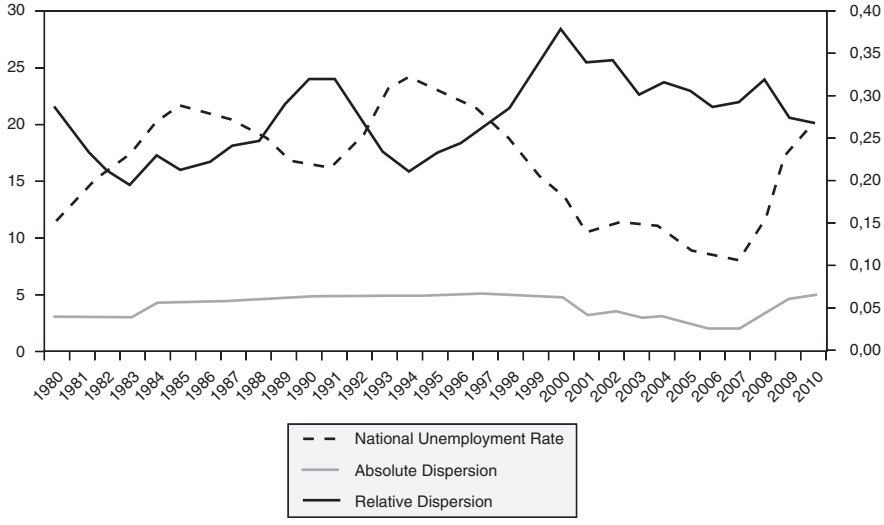

Table A1. List of included variables in the wage equation regression. Definitions

Variable	*Definition*
Lu	Log of the Unemployment rate
Female	=1 if observation is female
Ed1-Ed4	Education level • Ed1: primary • Ed2: secondary I • Ed3: secondary II • Ed4: Higher
Exp1-Exp5	Experience: Age-education-6-years of tenure • Exp1: 4 years or less • Exp2: 5 to 9 years • Exp3: 10 to 15 years • Exp4: 15 to 20 years • Exp 5: more than 20 years
Expsqr	Experience squared
Tenure1-Tenure4	Tenure: • Tenure 1: less than a year • Tenure 2: 1 to 4 years • Tenure 3: 5 to 9 years • Tenure 4: more than 10 years
Ocup1-Ocup9	Occupation level: • Ocup1: Legislators, senior officials and managers • Ocup2: Professionals • Ocup3: Technicians and associate professionals • Ocup4: Clerks • Ocup5: Service workers and shop and market sales workers • Ocup6: Skilled workers • Ocup7: Plant and machine operators and assemblers • Ocup8: Elementary occupations (services) • Ocup9: Elementary occupations (other activities)
Age1-Age3	Age group • Age1: 25 to 54 • Age2: less than 25 • Age3: more than 54
Contract1-Contract2	Type of contract • Contract1: permanent • Contract2: fixed-term
Wktime-Wktime2	Working time status • Wktime1: full time job • Wktime2: part-time job
Size1-Size3	Size of the firm (number of workers) • Size 1: 10 to 49 workers • Size 2: 50 to 99 workers • Size 3: more than 100 workers
Wagr1-Wagr3	Type of wage agreement: • Wagr1: national agreement • Wagr2: regional agreement • Wagr3: firm-level agreement

Table A1. *(cont.)*

Variable	*Definition*
Sector1-Sector22	Sector of economic activity • Sector1: Mining and quarrying • Sector2: Manufacture of food products, beverages and tobacco • Sector3: Manufacture of textiles and textile products • Sector4: Manufacture of leather and leather products • Sector5: Manufacture of wood and wood products • Sector6: Manufacture of pulp, paper and paper products; publishing and printing • Sector7: Manufacture of coke, refined petroleum products and nuclear fuel • Sector8: Manufacture of chemicals, chemical products and man-made fibres • Sector 9: Manufacture of rubber and plastic products • Sector10: Manufacture of other non-metallic mineral products • Sector11: Manufacture of basic metals and fabricated metal products • Sector12: Manufacture of machinery and equipment n.e.c. • Sector13: Manufacture of electrical and optical equipment • Sector14: Manufacture of transport equipment • Sector15: Manufacturing n.e.c. • Sector16: Electricity, gas and water supply • Sector17: Construction • Sector18: Wholesale and retail trade; repair of motor vehicles. motorcycles and personal and household goods • Sector 19: Hotels and restaurants • Sector20: Transport, storage and communication • Sector21: Financial intermediation • Sector22: Real estate, renting and business activities

Table A2. Estimated coefficients

	All Regions		*Group H*		*Group M*		*Group L*	
	Coefficient	*t-ratio*	*Coefficient*	*t-ratio*	*Coefficient*	*t-ratio*	*Coefficient*	*t-ratio*
Lu	–0.082	–5.42	–0.0602	–2.56	–0.0992	–4.81	–0.1134	–3.29
Female	–0.0807873	–12.88	–0.0897228	–4,84	–0.0814814	–9.03	–0.0869769	–10.25
Ed1	–0.128365	–19.09	–0.142904	–7,83	–0.1389034	–15.38	–0.1078033	–13.63
Ed2	–0.1141137	–17.98	–0.1358443	–7,60	–0.117943	–13.78	–0.1067386	–13.09
Ed3	–0.0610751	–9.09	–0.0624237	–4,63	–0.0627676	–7.04	–0.0644377	–7.45
Exp1	–0.0547459	–13.64	–0.0400626	–3,34	–0.0553885	–11.54	–0.0621278	–6.56
Exp2	–0.0282149	–8.87	–0.0122843	–1.61	–0.0293153	–7.24	–0.0394991	–5.70
Exp3	–0.0135848	–5.21	–0.0078726	–1.28	–0.0125973	–3.92	–0.0243776	–3.91
Exp4	–0.00098	–0.49	–0.0014782	–0.33	0.0008185	0.34	–0.0068858	–1.40
Expspr	0.0000258	8.21	0.0000169	2.02	0.0000282	7.49	0.0000256	3.61
Tenuresq	0.0001181	24.24	0.0001312	10.10	0.0001233	20.17	0.0000981	9.69
Tenure1	–0.1014803	–24.30	–0.0984612	–7.90	–0.0999819	–19.94	–0.106007	–11.81
Tenure2	–0.0730701	–20.72	–0.0811217	–7.83	–0.0713482	–16.22	–0.0685662	–9.65
Tenure3	–0.0405958	–12.97	–0.0500494	–5.11	–0.0376749	–9.96	–0.0406004	–6.46
Ocup1	0.5427991	25.80	0.4952819	26.33	0.5507799	18.87	0.5456798	22.72
Ocup2	0.4263341	26.51	0.4209608	24.55	0.4265917	19.34	0.4204418	20.62
Ocup3	0.2173186	35.86	0.2336207	16.92	0.209851	27.15	0.2279728	18.01
Ocup4	0.072642	13.28	0.079363	6.33	0.0639724	9.46	0.0920804	8.37
Ocup5	0.0357889	5.97	0.0672232	5.13	0.0226114	3.16	0.0484415	3.98
Ocup6	0.0661487	15.25	0.0524762	6.16	0.0653204	11.31	0.0801124	9.60
Ocup7	0.0406955	9.39	0.022216	2.24	0.0399395	7.52	0.0569278	5.48
Ocup8	–0.0282488	–3.79	–0.0067757	–0.45	–0.0449574	–5.27	–0.0106861	–0.68
Age1	0.0265087	6.57	0.0298903	3.23	0.0278705	5.65	0.0236372	2.52
Age2	0.0158629	3.66	0.0092057	1.03	0.0183636	3.57	0.0147814	1.34
Contract1	0.0173162	6.42	0.0021972	0.36	0.0226384	6.78	0.0088408	1.45
Wktime1	–0.019823	–3.90	–0.0027493	–0.20	–0.0253628	–4.04	–0.0206552	–2.44
Size1	–0.1051517	–28.78	–0.1319687	–17.16	–0.0933251	–21.23	–0.1176613	–15.66
Size2	–0.0682937	–19.70	–0.0926546	–12.29	–0.0644222	–14.62	–0.0646122	–9.61
Wagr1	–0.004686	–0.31	0.0507346	1.56	–0.0242045	–1.21	–0.0085144	–0.31
Wagr2	0.06006	3.77	0.0867808	2.70	0.0544379	2.48	0.0537022	1.95
Sector1	0.0024479	0.13	0.0003455	0.01	–0.0063153	–0.26	0.0463601	1.94
Sector2	–0.017037	–2.55	0.0015627	0.11	–0.0084899	–0.99	–0.0639824	–4.64
Sector3	–0.054651	–8.44	–0.0336798	–2.68	–0.0531503	–6.53	–0.0771791	–5.98
Sector4	0.1250883	13.37	.12025530	4.85	0.1293942	11.00	0.1023396	6.06
Sector5	0.0177997	2.68	0.058662	3.95	0.0172824	2.10	–0.0146747	–1.00
Sector6	–0.0690518	–8.83	–0.0277117	–1.44	–0.0872372	–10.96	–0.0439372	–1.91
Sector7	0.3780734	14.14	0.3871489	6.77	0.3890055	11.29	0.2908678	5.59

Table A2. *(cont.)*

	All Regions		*Group H*		*Group M*		*Group L*	
	Coefficient	*t-ratio*	*Coefficient*	*t-ratio*	*Coefficient*	*t-ratio*	*Coefficient*	*t-ratio*
Sector8	0.1785761	18.28	0.1897076	4.60	0.2023733	22.04	0.0688294	3.37
Sector9	0.0830924	8.36	0.1139358	6.36	0.1051103	8.49	0.0104588	0.69
Sector10	0.0198082	2.68	0.0569783	2.85	–0.0013998	–0.18	0.059841	3.65
Sector11	0.0515172	7.07	0.0349469	2.97	0.0601308	6.32	0.025928	1.94
Sector12	0.061215	6.76	0.0353728	1.75	0.0689106	6.05	0.0386831	2.26
Sector13	0.0566835	5.71	0.0866646	4.68	0.0706053	5.59	–0.0058063	–0.36
Sector14	0.1104888	13.01	0.129007	5.08	0.1061808	9.98	0.0950183	6.54
Sector15	0.0251227	3.34	0.0647673	3.04	0.035271	4.22	–0.0321207	–2.19
Sector16	0.2936199	19.62	0.2811808	12.40	0.3139815	14.69	0.2437218	8.08
Sector17	0.0065349	0.77	–0.0095702	–0.57	–0.022823	–2.46	0.1022398	8.25
Sector18	0.0102186	1.77	0.0228663	1.72	0.0165177	2.27	–0.0305813	–3.23
Sector19	0.0868793	8.94	0.1444273	8.51	0.0777567	6.92	0.0403822	1.60
Sector20	0.0520054	7.67	0.04548	2.53	0.0585694	7.27	0.032914	2.13
Sector21	0.2100134	20.90	0.2783394	14.17	0.1977158	15.12	0.1720809	12.08
Dum1995	4,968201	1.83	5.123839	62.00	4,964896	10.95	4,960049	203.35
Dum2002	–0.0828217	–2.68	0.0890119	0.94	–0.078717	–1.51	–0.1067079	–3.74
Reg1	–0.0592412	–5.07	0.084074	8.49				
Reg2	–0.0741609	–6.91					–0.0718408	–9.92
Reg3	–0.034225	–2.95						
Reg4	0.013175	1.05					0.0117567	1.39
Reg5	–0.1526836	–10.26						
Reg6	–0.0339952	–3.16			0.0000522	0.00		
Reg7	–0.0823115	–6.83			–0.0490364	–4.11		
Reg8	–0.0775169	–7.81			–0.0440814	–4.55		
Reg9	–0.0328207	–3.22			–0.0000444	–0.00		
Reg10	–0.0565365	–5.75			–0.0217388	–2.24		
Reg11	–0.1183619	–9.53	.03410870	3.10				
Reg12	–0.0943835	–9.34			–0.0595519	–5.80		
Reg13	–0.0436151	–2.66			–0.0081167	–0.56		
Reg14	–0.1005037	–7.95			–0.0670256	–5.21		
Reg15	0.0368974	3.08					0.037773	3.88
Reg16	–0.0017287	–0.17					0.0080651	1.04
Reg17	—	—						
Constant	1.461543	64.64	1.175759	20.40	1.44463	44.30	1.493618	41.73
N. Obs	777,789		1,216,729		486,851		164,209	
Clusters	408		72		216		120	

Comment on «Wage Flexibility And Local Labour Markets: A Test On The Homogeneity Of the Wage Curve in Spain», by Roberto Bande, Melchor Fernández and Víctor Montuenga

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The extensive literature based on the seminal works by Blanchflower and Oswald (1990, 1994) on the wage curve includes estimated wage curves for many countries (Nijkamp and Poot, 2005). In addition, the research on this topic has advanced along three parallel lines: consolidating the theoretical basis of the wage curve, improving the estimation methodology and estimating wage curves for different groups of workers.

Regarding the theoretical basis of the wage curve, earlier works have offered a wide variety of explanatory models, including implicit contracts, union bargaining, efficiency wages, and labour turnover costs (Blanchflower and Oswald, 1994; Campbell and Orszag, 1998). However, there is currently a wide consensus that the most plausible explanations are related to efficiency wages and/or labour turnover costs. From a methodological perspective, recent studies are increasingly using panel data, applying instrumental variables estimation techniques to account for unemployment endogeneity and using different methods to control for composition effects. The wage curve has also been estimated for different groups of workers based on age, gender, race, education, occupation, industry and nationality, as well as for different regions or territories.

The article by Bande, Fernández and Montuenga is part of this third line of research, estimating wage curves for groups of Spanish regions. The objective is to test the existence of regional differences in wage elasticity to unemployment. The authors find a lower effect in the group of regions with higher unemployment rates. This evidence is consistent with the model of collective bargaining in Spain because it reflects the important imitation effects that generate a weak sensitivity of individual wages to local labour market conditions.

The analysis has several interesting aspects. Estimating regional differences in the wage curve is not a totally new topic, but it is not usually mentioned in the literature. The reason for this scarcity of studies is the difficulty of estimating wage curves for individual regions due to strong data requirements. The authors partially overcome this problem by working with groups of regions. Second, the authors use the Spanish Wage Structure Survey, a matched employer-employee data set. This permits the inclusion of a set of controls related to firm tenure and type of labour contract that are not common in the literature. Third, analysing wage flexibility in Spain is especially interesting because labour market reforms have recently been approved to

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introduce more flexibility in the wage-setting model. Furthermore, the paper is well written and very transparent in presenting its methodology and the problems that it has overcome. For these reasons, the work by Bande, Fernández and Montuenga is an important step forward in the literature on wage curves and regional wage flexibility in Spain.

Nevertheless, the paper has some limitations. For example, the authors have encountered the difficulty —common in most studies that estimate disaggregated wage curves— of defining the specific (or closest) labour market for each individual in the sample. The usual solution consists of using unemployment rates by region, gender and educational level. However, this requires the assumption that these specific labour markets are independent of one another (i.e., competition for jobs only takes place within each labour market) and, most likely, this is not the case in many occupations (*i. e.,* women and men can compete for similar jobs if they are equally qualified). Furthermore, the high incidence of over-education among Spanish workers implies that workers with higher educational levels are also competing for jobs that require less education. Thus, the independence of the considered regional labour markets is not fully guaranteed. Additionally, the pseudo-panel created pooling of the three waves of the survey is estimated by imposing the restriction that the coefficients associated with the controls are constant over time, which, again, is a risky assumption. For instance, Felgueroso *et al.* (2010) found that the skill-wage premium has clearly declined during the period of analysis.

In any case, the article represents clear progress in the analysis of Spanish regional labour markets, although the authors are cautious about their conclusions. They conclude that «high unemployment is related to low wage elasticity, while low unemployment is related to higher sensitivity of wages to local labour market conditions» and that the «results seem to indicate that regions which suffer from larger unemployment rates exhibit lower wage flexibility». Despite the progress that the paper represents, the authors recognise that it lacks a deeper analysis of the factors causing these results. There are three potential areas for future research on this topic. First, it is necessary to consider recent advances in the analysis of the spatial heterogeneity of wage curves for different countries, such as Japan, the United States or Germany. Second, the size of the considered geographical units is a key issue when estimating regional wage curves. The authors use information on *Comunidades Autónomas* (NUTS-II regions), but more geographical detail is needed to avoid problems related to aggregation bias. The challenge here is to find an appropriate database to carry out this type of analysis for the Spanish regions. Finally, as previously mentioned, further evidence on the causes of the regional differences of the estimated elasticities is needed. Although academic research on this topic is still scarce, some potential explanatory factors have been suggested. For instance, the role of the interregional migration that affects competition for available jobs or regional differences in the monopsonistic power of firms due to unequal agglomeration of firms could play a role.

Overall, the article represents clear progress in the analysis of regional wage flexibility and opens new avenues for future research.

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